REMARKS

Claims 1-14 are pending in the application. Claims 1 and 10 are the only independent claims.

Claims Rejections - 35 U.S.C. §§ 102 and 103

Claims 1-4 and 10-14 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Glass Expansion (admitted prior art) in view of U.S. Patent No. 3,913,444 to Otte.

Claims 5-9 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Glass Expansion (admitted prior art) in view of Otte and further in view of U.S. Patent No. 4,919,291 to Romano et al.

The Examiner particularly maintains that the Otte reference and the Glass Expansion prior art are in the same field of endeavor, and that nickel coating an inner layer of a copper tube as disclosed by Otte would have been recognized as an art pertinent to the electroplated copper coil of the Glass Expansion prior art.

The Invention The present invention is directed to an improved radio frequency (RF) or microwave frequency (MF) load coil comprising a conventional primary copper capillary tubing coil, electroplated with a metal that acts as a barrier to the migration of copper to an overlying electroplated noble metal layer. Metals preferred for the barrier layer are certain transition (Group VIII) metals, particularly platinum, palladium, and rhodium. The noble metal protects the barrier layer and the conventional copper coil from oxidation, physical degradation (scaling), and performance degradation. The noble metals suitable for the surface electroplated layer are gold, platinum, palladium, rhodium, and ruthenium. Preferably, gold is used as the outer or surface layer.

Applicant respectfully traverses the rejection of claims 1-4 and 10-14 under 35 U.S.C. § 103(a) as being unpatentable over the Glass Expansion prior art in view of Otte. Likewise, applicant respectfully traverses the rejection of claims 5-9 under 35 U.S.C. § 103(a) as being unpatentable over the Glass Expansion prior art in view of Otte and further in view of Romano et al.

The Prior Art Like applicant's invention, the Glass Expansion prior art is directed to a copper radio frequency and microwave frequency induction load coil typically used in inductively coupled plasma optical emission spectroscopy and inductively coupled plasma mass spectroscopy as well as analogous applications of such load coils.

In contrast, Otte is directed to thermally deformable fastening pins. The useful functioning of the Otte fasteners arises from the relative strengths and thermal responses of different materials employed in different layers of the fastening pins. In particular, Otte employs two alloys, i.e., nickel-titanium and beryllium-copper, in respective layers of the fastening pins.

Otte says nothing about copper radio frequency and microwave frequency induction load coils. Concomitantly, Otte is silent about the problems such coils might have. Moreover, Ott says nothing about the materials used in his fastening pins that would induce one of ordinary skill in the art to use those materials in a copper radio frequency and microwave frequency induction load coil.

In brief, one of ordinary skill in the art familiar with the teachings of Otte and the Glass Expansion prior art would feel no motivation or impetus to use the metals of the

Otte fastening pins in the copper radio frequency and microwave frequency induction load coil of the Glass Expansion prior art.

The fastening pins of Otte are used in such applications as aircraft fabrication and printed circuit boards. The problems Otte sought to solve were difficulties of driving prior fastening pins into place and removing such pins when installed. These problems are not problems associated with conventional induction coils and are far removed from the problems addressed by applicant's invention, namely, the problems of disintegration and failure that are exhibited by induction load coils.

One of ordinary skill in the art would find no motivation or impetus in the Otte patent or the Glass Expansion prior art to use the nickel-titanium alloy of Otte in the Glass Expansion coils. There are generally no problems in installing or removing induction load coils that could be remedied by the solution of Otte.

It is to be noted that applicant's company has achieved some commercial success in the marketing of an induction load coil product as described and claimed in the present application. The Perkin-Elmer company has placed an order and is currently evaluating the product for installation on all of their new instruments as well as offering it as an aftermarket item in their parts catalogue. Applicant's invention deserves patent protection as none of the instrument manufacturers were able to resolve the problems associated with plating radio frequency load coils.

Conclusion

For the foregoing reasons, independent claims 1 and 10, as well as the claims dependent therefrom, are deemed to be allowable over the prior art and in condition for allowance. An early Notice to that effect is earnestly solicited.

Should the Examiner believe that direct contact with applicant's attorney would advance the prosecution of this application, the Examiner is invited to telephone the undersigned at the number below.

Respectfully submitted,

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